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honesty of the African character, seem to have been displayed here to a greater degree than anywhere else during the journey, and eventually the Baron and his party were obliged to leave (after wasting a large amount of property in presents), without being able to effect the objects of the journey. The nearest they could get was about 15 miles from the summit, and an altitude of 4867 feet: but they made numerous observations, sufficient to enable Mr. Thornton to sketch a tolerably accurate map of the group of mountains. The top of Kilima-ndjaro, from this side, appeared as a broad dome with a rugged, blunt peak on its north-west side of nearly the same height as the summit and sloping away gently for a long distance; behind the eastern slope rose the very ragged peaked top of the east peak. The snow showed beautifully on all these summits. The principal top had a good thick, smooth, coating of snow, with patches and streaks lower down, lying in ravines. Mr. Thornton calculated the height to be 22,814 feet. The Jagga range of mountains on the southern slopes were covered with dense sombre forests; their line of summits is somewhat regular and defined, but cut through by many deep ravines and narrow valleys. The Madjame side of the cone was very steep, and Mr. Thornton saw three snow-slips or avalanches gliding down the slope and creating clouds of snow-dust; but he saw nothing like a glacier. The rocks observed on the lower hills were vesicular, semiporphyrific lavas and other lavas of a spongy nature, showing the volcanic nature of these elevations.

The party left Madjame by stealth in the dead of the night of the 4th September, to escape being plundered by the chief, and, after a long detour to the south, arrived at Mombas on the 10th of October.

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### III.—*Travels in Kurdistan, with Notices of the Sources of the Eastern and Western Tigris, and Ancient Ruins in their Neighbourhood.* By J. G. TAYLOR, Esq., H.B.M.'s Consul at Diarbekr.

*Read, Jan. 9, 1865.*

THE information contained in the following paper is the result of three journeys which I made in 1861-63, with the sanction of Her Majesty's Government, in the consular district of Diarbekr, the capital of the modern Pashalik of Kurdistan, and the seat of its Mushir or Governor-General. Originally undertaken for the purpose of obtaining reliable commercial and statistical data, I did not, nevertheless, neglect to note everything of geographical or historical interest, which either the reports of the natives or ancient authors had brought to my notice. Such information could not

Nile problem"—so far from being "settled for ever" by the late exploration, are thrown farther from discovery than before. They are not, we have been told, *in nubibus*, but they elude our vision. The exploratory labours of years, perhaps of a whole generation, must be lavished before even a rough survey of the southern Nilotic basin can treat the subject with approximate correctness of detail. "Mais les sources du Nil, sont-elles decouvertes?" enquires our fellow-labourer in the field of geographical science, M. V. A. Malte-Brun. "*Nous ne le croyons pas.*" No geographer does, no geographer can, believe in the actual "settlement" of the Nile sources. That the Tanganyika is the Western "top-head"—not source—of the Great Nile, and that the Bahari-Ngo, which supplies the 'Tubiri, is the Eastern, I have little doubt. But the Arcanum Magnum of Old-World Geography has not yet been solved. The old lines—

"Arcanum natura caput non prodidit ulli ;  
Nec licuit populis parvum te, Nile, videre,"

have lost none of their force : it still remains to this generation, as to its forefathers, "Caput quærere Nili"—to close the Canon of Geographical Discovery.

II.—*Notes on a Journey to Kilima-ndjaro, made in Company of the Baron von der Decken.* By the late RICHARD THORNTON, Geologist to the Expedition ; compiled from the Journals of the Author.\*

*Read, November 14, 1864.*

THE narrative of Mr. Thornton, the scientific companion of the Baron von der Decken on his first journey to the snow-clad peaks of Kilima-ndjaro in 1861, commences with the departure of the expedition from Mombas on the East African coast. The party consisted of fifty-eight men, including the Baron, Mr. Thornton, Coralli (the Baron's valet), three leaders, five servants, and forty-seven carriers. Seven of the men were armed and paid by Mr. Thornton himself ; one of them being a native of the Zambesi, named Sigwati, who had accompanied him since he had left the Livingstone expedition in that region.

Early in the morning of the 29th of June they commenced their march, and proceeded for the first two days, in straggling order, over the rugged hills and valleys which lead from the coast into the interior. The country was peopled by the Wanika and Wakamba tribes, and their numerous villages were mostly sur-

\* See Map, Journal R. G. S., vol. xxxiv. p. 1.

rounded by stockades, showing the unsettled state of the neighbourhood. The huts of the Wakambas were of bee-hive shape, thatched with coarse grass, having the roots outwards. The men are slim in figure, and are accustomed to polish their naked skins with a mixture of red ochre and oil. They wear a great many ornaments, the most conspicuous of which is a broad coil of thick brass wire hung round the neck, nipping it tightly; and similar small coils fixed in the lobes of the ear. The front part of the head is shorn, but the hair at the back is twisted into tails and decorated with beads. The women wear a cloth shirt, rather full from the waist to the knees, and are adorned with brass and iron rings round the ankles, besides the coil of brass wire round the neck similar to that which the men wear.

After crossing the coast ranges, the party proceeded for five days over a gently undulating country, with tracts of grassy land and scattered patches of wood. Small herds of giraffes, antelopes, and ostriches now began to appear, but the march was continued without interruption until, after a long gentle ascent, they arrived at the country of the Wa-teita, a well-made but short and plump people, who occupy the healthy table-land from which the mountains named Killibassi and Kadiaro rear themselves. This district is not more than 60 miles, in a straight line, from the coast, and rather less than half way to Kilima-ndjaro.

The Wa-teita were armed with slender bows and leather quivers full of poisoned arrows, besides wooden spiked javelins and small swords. The women and children were covered with ornaments, brass collars and strings of beads round neck, wrists, waist and ankles.

The party remained amongst these savages for several days, it being a main object with the Baron to ascend Mount Kadiaro and take observations from the summit. Strong opposition, however, was offered to the project by the chiefs and people; and it was only after expending much in presents that one of the head men was induced to give the necessary permission and serve as guide. A goat was killed, and a favourable augury being obtained on an examination of its entrails, the party commenced the journey; Mr. Thornton taking with him the theodolite and boiling-point apparatus. The path at first was well trodden, and the soil of a bright red colour. After a short ascent they came to a nearly perpendicular face of bare rock, which they clambered up with difficulty, and then followed a very steep rugged path until their progress was stopped by a chief who said he was the owner of the hill, and stationed himself with a party of men in the middle of the path to stop them. After a long and tedious palaver the scruples of the chief were allayed and the party moved on. Other obstacles were placed in their way by the two chiefs, and at one

time they were near turning back altogether, but they finally reached the summit, the last part of the ascent being over highly-inclined surfaces of bare rock. A village of Wa-teita, governed by a third chief, and consisting of a few circular, half-rotten and dirty huts, was found perched in a nook a little below the highest peak. The summit was a very narrow, grassy ridge. The wind was cold and boisterous, and a heavy drizzling mist concealed from view all the surrounding country. According to observations taken, the height was 4130 feet, a much lower elevation than that estimated by the missionary traveller Rebmann, which was 6000 feet.

Three days after the ascent the Wa-teita showed signs of violent hostility to the party. The strife began by a body of natives seizing one of the men amidst furious demonstrations, yelling and brandishing their swords. The Baron and Mr. Thornton rushed out of the camp, rifles in hand, and rescued the man. This had the effect of bringing a larger number of the savages to the spot, armed with their poisoned arrows. They came down in bodies from the mountain, and on facing the Baron's party began chanting a war-song, pacing backwards and forwards in circles about the grassy undulating ground in front of the camp, and waving their swords in accompaniment to the chant. As more arrived they formed into three companies, each of which, in turn, advanced towards the camp in measured tread, made a hostile demonstration, and then wheeled round to the rear to repeat the manœuvre. Things now began to look serious, for some 200 of these enraged warriors were assembled; the Baron, Coralli, and Thornton were obliged to put themselves on guard outside the camp with their loaded rifles and revolvers, ready to fire if a single arrow should be discharged. As to their servants and carriers, they kept perfect neutrality, lying beside the fires inside the camp. Each company of natives was headed by a fighting chief, who led the chant which regulated their motions, and from the flanks a number of skirmishers rushed about, yelling, leaping and flinging themselves on the ground in great fury. After this had continued for a long time a parley was proposed, and it turned out that all this rage had been excited by the Baron and Thornton having made "uganga," or magic, on the top of the mountain. The "Waganga" (magicians) of the tribe were the most furious, and, on the Baron's refusing to pay a fine for his misdemeanor, again excited the warriors to threaten the party. One of them pretended to throw himself into a frenzy, foaming at the mouth and rushing on the party with his sword; but he was seized by his companions and dragged back. Finally the whole affair was arranged by a heavy payment and an exchange of presents. The warriors afterwards had a general fight amongst themselves.

On the 11th of July the party left this inhospitable country, and travelled for two days over a dry tract, destitute of water, to the s.s.w. of Mount Kadiaro. At twelve minutes past seven, on the morning of the 14th, Mr. Thornton had his first glimpse of Kilima-ndjaro, its cap of snow shining brightly about  $2^{\circ}$  above the horizon. After four days' march they arrived again at an inhabited district, the neighbourhood of the Paré Mountains. The natives here received them kindly and led them to a good camping-ground, selling them provisions in abundance.

The ceremony of blood-drinking was gone through with the chief, to seal the mutual friendship between the tribe and the strangers. The people were very different from the Teitas: they were lighter coloured, and did not shave the front of the head. Their swords and bows were longer, and their arrows had barbed heads. Each man carried a small black clay pipe, and many had leather bottles to contain snuff. The lobes of the ears were hung with large circular disks of ornamented wood. The women wore petticoats made of the skins of animals, and some were tattooed on the breast.

On the 19th they turned towards the north, passing over grassy plains and several dry watercourses. On the 20th they discovered a large sheet of water, called Lake Jipé. The southern margins formed a long grassy slope covered with bleached shells, both land and fresh-water. The waters were for a long distance concealed by a thick belt of reeds growing from a muddy soil, and swarming with waterfowl. After marching for several miles along the Eastern side they came to a place where the lake was visible, its waters rippled by a gentle breeze, and about three and a half miles wide. The total length of the water is about 20 miles, and the northern shores are fringed with gigantic papyrus, some of the plants 15 feet high. Herds of zebra and white rhinoceroses were occasionally seen, and the lower slopes of Kilima-ndjaro were in full view to the north-west.

On the 22nd of July they arrived at Daffeta, and were well received by the chief. The shields of the Daffeta people are made of buffalo-hide, and are 3 feet long by 18 inches wide, strengthened inside by a broad rib of wood, shaped to a neat handle in the middle. The Daffetas are great bee-masters; their bee-hives are hollow logs, about 4 or 5 feet long and 16 inches diameter, but thicker in the middle. They are planed smooth; a circular block of wood is fitted into each end, with a number of small notches cut round its edge for the entrance and exit of the bees, a projecting piece of wood being fixed outside for the bees to alight on.

On the 24th of July, Mr. Thornton, accompanied by guides given him by the chief of Daffeta, ascended a hill in the neighbourhood, 2118 feet high, and took a series of observations. The top

of Kilima-ndjaro, now 40 miles distant, shone out beautifully for a few minutes, showing streaks of snow along its ravines to nearly the base of its upper cone. Two days afterwards the party left for the village of Kilema, on the south-eastern slope of the great mountain. On the first day's march Mr. Thornton obtained another and still better view of Kilima-ndjaro, the whole of the snow-capped upper cone being distinctly visible. Many herds of elands and zebras were passed on the grassy plain which slopes up to the foot of the mountains.

The nature of the country began to change on the following day, when they reached the streams which flow from the southern slopes of Kilima-ndjaro. The ascent was steep and rocky, through dense woods, the river Goni flowing to the right of their line of march, through a deep valley.

On reaching the village of Kilema, which was surrounded by a moat 15 feet deep, fenced with a thick hedge, they were met by the leading men, each carrying a bunch of fresh grass in token of friendship. The people were in some instances of light-coloured skin: the young girls especially had a very pleasing appearance, many being lighter than half-castes, and having the hair shaved off on each side of their foreheads, which heightened the effect of their really fine, expressive features.

They were very scantily dressed, and some of the elder women wore thick pewter bracelets weighing  $1\frac{1}{2}$  lb. each, besides strings and belts of variously-coloured beads on different parts of their bodies. The boys and girls had, in some cases, iron rattles attached to their knees or ankles.

The chief of Kilema was at first profuse in his promises of assistance in the project of ascending Kilima-ndjaro, the highest peak of which was 20 miles distant from the village, over a mountainous country. He tried to dissuade the Baron from proceeding to Madjame, on the south-western slope, whence the ascent was as practicable as from Kilema, representing that the chief there had no power. The Baron promised a large present, and it was arranged that two guides should conduct them to the peak two days after the new moon, when the weather would be favourable. Several days were occupied in palavers and exchanges of presents, and Mr. Thornton profited by the time to take observations and study the customs of the people. One day he visited a native blacksmith, and watched the process of making an iron chain. The workmen drew out a fine wire and wound it round a thicker piece like a knitting-needle, afterwards cutting through the coils along the length of the needle with a small chisel, so that each separate coil made a little link when flattened. His forge was in a low shed, and his anvils consisted of blocks of smooth hard stone. The bellows were two long conical bags of leather sewn up on one

side, the air being collected into one stream by a hollowed forked branch of wood. One of his tools was a simple and ingenious kind of hand-vice, used for grasping the end of a wire when drawing it through the plates.

Another day he ascended a hill behind the village, an altitude of 4744 feet, the road to which led through plantations of bananas, which are very extensive over all the well-peopled lower slopes of Kilima-ndjaro. The upper part of the hill was covered with short fine grass. The view on the north and west was obscured by low clouds, but a fine sweep of country was beheld to the south, over a great plain through which flows the river Pangani between the Arusha and Ugono ranges. On the following day, ascending another hill, the atmosphere was much clearer to the west, and a huge plain was seen extending from the south-western foot of Kilima-ndjaro to a very high conical mountain, evidently a volcano, but without snow on its summit. This is called Mount Meru, and its elevation is upwards of 13,000 feet: it lies about 60 miles from the main peak of Kilima-ndjaro.

The Sultan of Kilema failed in all his promises, and the Baron, finding it impossible to ascend from this place, resolved to march to Madjame. The route taken was a detour through the uninhabited plain to the south of the mountains; this being chosen in order to avoid the numerous villages and chiefs which crowd the southern slopes.

On the second day of the march they passed through a rugged country clothed with dense forest, amidst frequent rains (although this was the height of the dry season); the undergrowth was of grass and ferns, and the trunks and branches of the trees were overgrown with parasitic plants dripping with moisture. Beautiful flowers peeped through the thick coating of greenery, and the path was encumbered with fallen and rotting trees. The country became more open in the plain through which they afterwards travelled until they again turned towards the hilly region on approaching Madjame. Kilima-ndjaro now became again visible, the first time was by moonlight on the 20th of August. The full-moon rose as the sun set, and a large snow-covered conical peak was seen to the w.n.w., nearly as high as the real top. Between the party and the snow-clad peaks rose a high, even range, cut through by several precipitous ravines; the snow was seen here descending much lower than on the eastern side.

The chief of Madjame turned out to be quite as ill-disposed to forward the views of the travellers as he of Kilema, and in addition to the usual difficulties the party had to contend with the trickery and evil influence of a sorcerer named Nassoro, who imputed "uganga" to the instruments which Mr. Thornton used on the tops of the hills. The greediness, caprice, superstitiousness and dis-